

animouth



COPYRIGHT

©1999 Walter William Weems Bowie . All Rights Reserved

This program, routines, functions, features, graphics and related documentation are copyrighted. You may not use, modify, copy or transfer the program or documentation, or any copy except as expressly provided in this agreement.

SINGLE USER SOFTWARE LICENSE: You have purchased a single-user license. One person may use this program on multiple machines, or, multiple people can use this program on one machine, but multiple people cannot use this program on multiple machines simultaneously. If you upgrade to a newer version, you still have only one license and registration number. You cannot sell your old version to another person. The unauthorized duplication and/or storage of this product in any storage medium is illegal and is prohibited by federal and international laws. **CAREFULLY READ ALL THE TERMS AND CONDITIONS OF THIS AGREEMENT PRIOR TO OPENING THE DISKETTE PACKAGE. OPENING THE DISKETTE PACKAGE INDICATES YOUR ACCEPTANCE OF THESE TERMS AND CONDITIONS.** If you do not agree to these terms and conditions, promptly return the unopened diskette package and the other components of this product to the dealer where the purchase was made.

BACK-UP: You may make copies of the program solely for back-up purposes. You must reproduce and include the copyright notice on the back-up copies. Copies for any other purposes are prohibited.

WARRANTY:WeemsWare makes no warranties, either express or implied, regarding the enclosed computer software package, its merchantability or its fitness for any particular purpose. The exclusion of implied warranties is not permitted by some states or countries so the above exclusion may not apply to you. This warranty provides you with specific legal rights. There may be other rights that you have which vary among states and countries. WeemsWare warrants the magnetic media to be free from physical defects for 90 days after purchase. WeemsWare will replace the disks free of charge should they fail within this time. Because animouth is constantly being improved, WeemsWare cannot guarantee its accuracy after publication and disclaims liability for changes, errors and omissions, or damages resulting therefrom.

TERMS: This license is in effect until terminated. You may terminate it by destroying the program and documentation and all copies thereof. This license will also terminate if you fail to comply with any portion of this agreement. You agree upon such termination to destroy any and all such copies of the program in documentation.

WeemsWare

**4190 Evergreen Road
Oxford, MD 21654**

**Phone: 410-226-0404
Internet: www.weemsware.com
email: wbowie@weemsware.com**

Contents

Introduction	1
About Animated Speech	2
Interface Overview	5
Creating a Character	7
Editing Speech Events	11
Adding Digitized Voice Tracks	16
Loading Resources	17
Loading Text	18
Writing the Phonetic	18
Table of Phonemes	21
The JawMap Editor	22
ARexx Interface	26

INTRODUCTION

Thank you for purchasing animouth. I hope this document will answer most of your questions and show you how to use animouth. You can call 410-226-0404 if you have any questions, or visit our web site at www.weemsware.com and check the Frequently Asked Questions document. Enjoy!

What animouth Does

animouth provides a method for combining images with animbrushes and sounds to create talking characters. animouth follows the output of the Amiga's narrator.device, then displays one of a number of different images that make up corresponding mouth positions. There can be up to 64 images that make up the talking mouth, and are created and stored as an animbrush. The sequence of the images relates to either a preset mapping, or one that has been made up.

Installation

1. Place the animouth program disk into a floppy drive and open the icon for it on the workbench.
2. Double-click the Install icon, choose the user level and proceed. animouth does not need to be in any particular location. The only files not installed within the animouth directory are the narrator.device file, which is placed in the DEVS: drawer, and the translator.library file, which is placed in the LIBS: drawer, if they are not already there. An assignment of "animouth:" will be added to the user-startup file in the S: directory.

ABOUT ANIMATED SPEECH

Realistic mouth movement while talking has always been one of the more tedious and time consuming chores that an animator has faced. Since much animation has traditionally been created on a frame by frame basis, anticipating how the movement will look once played back has been more of an art rather than a science. animouth seeks to shorten, if not eliminate this time consuming cycle of experimentation by providing a method by which reasonable results can be obtained without understanding the mechanics involved, using preset mouth positions. The mouth positions are mapped to the output of the narrator.device, which allows synchronization in real-time. By altering the mapping and the mouth positions, however, the advanced animator can achieve results that more suit the character they have created. First, let's look at the basic mechanics in creating mouth movement. For example, let's take the phrase "Hello" and see how it can be displayed by animouth.

The sequence of frames in the graphic shows the default 16 frame mapping of images that display the moving mouth. The numbers correspond to the frame number of the animbrush that makes up the mouth. The text and phonetic parts are placed approximately where you would hear the sound of the letters being spoken. Note that each frame does not correspond to a particular letter, except in the case of consonants 'H' and 'L'. This is because the mouth is in constant motion as it forms the sound; there is not a one to one correspondence between frames and vowels. animouth is structured this way because the narrator.device outputs mouth width and height sizes which is a number between 0 and 15 , creating a 16X16 grid which allows 256 possible combinations. Simple width and height information works pretty well for vowel sounds, but does not allow for special mouth images that occur when consonants are spoken. animouth overcomes this obstacle by following along with each syllable and inserting consonant images at the appropriate places, in this case the 'H' and 'L' frames. This is taken care of automatically in animouth, and the user has the opportunity of tweaking this model by adding more frames and/or changing the mapping of the images on playback, known as a JawMap. See **Creating a Character** for more specifics on creating the animbrush that holds the mouth positions.

“HELLO”

Brush #	3	3	4	15	15	10	9	8	16	5	5	4	3	3
Text	_____ H _____ E _____ LL — O _____													
Phonetic	_____ H _____ EH _____ L — OW _____													

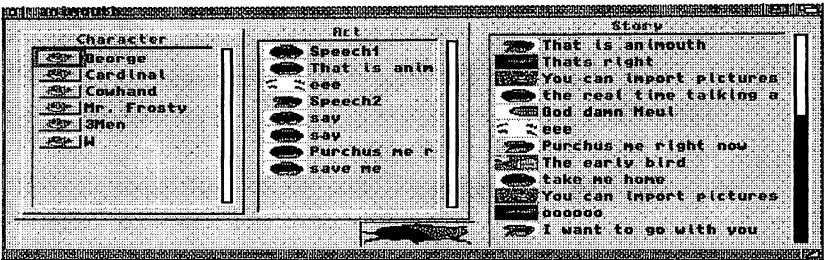
Default Animbrush Sets

_____ vowels _____																_____ Consonants _____					
16 Frames																	F,V	M,B	Default	L	
8 Frames																					
4 Frames																					
																M,B	Default				
																Default					

INTERFACE OVERVIEW

When you start animouth by double-clicking the icon, you are presented with three separate sections, Character, Act, and Story. Choose File, Load Project from the Menu and double-click "Tutor1.prj". You will see a number of Characters in the Character List. Only one will be highlighted by a box surrounding the icon. Click on a character not already selected and you will notice that the Act list will change. This is because a Character is really just a grouping of Acts. There are 3 types of Acts Speech, Image, and Sound. Characters can be added,loaded,saved,renamed or deleted from the Character menu. Select the Character called "George" and then double-click the first Act on the Act list. A new screen will come up, with an image in the background. Press the F10 key to see the Act play back. It is in this screen that you edit Speech Acts. Each type of Act has its own screen with gadgets that are relevant to its attributes. Hit the "Esc" key or click on the close gadget to return to the main screen. You can add new Acts to the list by choosing Action->AddSpeech , AddImage , etc. To create a Story sequence, simply drag icons from the Act list and let go while in the Story List. This clones the Act in the Act List, rather than moving it. This is so you can set up standard attributes for a Character, such as voice and images, then change only the text to keep a consistent voice. Playback what's in the Story List by choosing one of the options in the Story menu, Play Once, Play Loop, Play Top, or Play Random. "Play Once" plays the entire story through once. "Play Loop" will continuously loop the entire story. "Play From Top"

will start playing from the Act that is currently at the top of the Story List (so you can start in the middle of a long Story). "Play Random" will randomly choose Acts to play. "The Key Trigger" mode will load as many Acts into memory as possible, which are then triggered using the Function Keys (F1,F2,F3, etc.). To stop animouth while it is playing any of these options, press the "Esc" key. There will be a delay while it finishes the Act it is playing before it returns to the main screen.



CREATING A CHARACTER

Method for Creating Character (Using Brilliance)

1. Open Brilliance

2. Create background image with a mouth in a normal rest position.

3. Save image. It's a good idea to create a new directory to hold all of the elements for your character.

4. Make 16 identical frames by clicking on the anim icon, then hit set #. Set the total # of frames to 16, then hit return. It should say add 15 frames. Click on proceed.

5. Using the 16 frame template as a guide draw the mouth positions on the background in the correct order. Use the #1 and #2 keys to flip back and forth between frames as you work to keep the mouth positions relatively aligned. Hitting #4 will play the animation through so you can check for alignment and the proper movement between frames. Note however, that the frames will never play back in this order, the animation can move from one frame to any other frame, so keep them fairly consistent in size and alignment. Save your work as an entire animation as you go. It's a good idea to name it the same name as the background image, but with a ".anim" extension so that you can keep the different parts straight. Make sure that the sequencing is correct and that the sequence begins with frame #1.

6. Play back through the animation, noting how large an animbrush you'll need to grab to get all parts of the moving image without making it too large, and wasting memory. All of the images have to stay in memory at once, because it's not like a normal animation. Since there's no way to know

the sequence before playback, they all have to be available at the same time for instantaneous playback. Design your characters with this in mind, so that you can make the best use of your available chip ram. Go to frame #1 in the animation and pick up your 16 frame animbrush that will become the moving mouth.

7. Go to a spare page (hit the "j" key) and use the right mouse button to cycle through all of the frames to be sure you've grabbed everything and that it isn't cut off at some point.

8. If you want you can simplify alignment of the animbrush in relationship to the background by changing the handle of the brush. Place the brush exactly over top of the position it is supposed to be, and then press alt z. Carefully hold down the left mouse button, making sure that the brush did not move in the meantime. While holding down, move the mouse to the upper left corner of the screen, until it won't move anymore and then let go. This sets the handle of the brush to be the correct offset of the 0,0 position. When you put the mouse in the upper left, the animbrush should be exactly positioned where it's supposed to be. Now the position will be saved along with the animbrush, so that animouth can read the position from the file.

9. Save the animbrush. It's a good idea to save the animbrush with an ".abr" extension to distinguish it from types of files.

10. If for some reason you've changed the background image, or the palette, resave that file.

11. Now you're ready to test out your character in animouth. Start animouth, then choose Resources

from the file menu. Click on "Add" next to images, and load the background image. Click on "Add" next to AnimBr and load the animbrush. Note that the names for the files will appear in the pop-up menu gadgets. You can click on the pop-up menu for each resource, to see a listing of all the files you have loaded for that type. The selected filename's chip ram use is displayed underneath the name. The total amount of free chip memory is displayed at the top, by clicking on "Load" and "Unload" you can see how much or how many files can be loaded into memory at once. Be careful not to load too many as you can run out of memory. Close the resources window when you're finished.

12. Choose "Add Speech" from the Action Menu. Double click on the icon that has appeared in the Act List. The Editor for Speech Acts has appeared, and you can choose the Bkgd Image and AnimBr for this Speech Act.

13. Hit F1 to position the mouth relative to the background. The mouth will blink on and off and you can manually position the animbrush or the mouth by pressing down with the left mouse button. Fine tune the position using the arrow keys. If you saved the animbrush handle position using the Alt Z technique described in Step #8, you can position it automatically by just pressing the letter "h". When you're satisfied with the position, hit F1 again to return to the Speech Editor.

14. Hit F10 to playback the Speech Act. You have just finished creating your Character!

15. Exit the Editor by hitting the "Esc" key. Rename your Character by choosing "Rename" in

the Character Menu. Save your Character by choosing "Save" in the Character Menu. You can also save it as a project, but saving it as a Character will allow you to import it into existing projects without removing other Characters from the list, or changing the Story list.

EDITING SPEECH EVENTS

The Speech Editor is started by double-clicking a Speech Act in the Act or Story Lists.

The Speech Act is played back by hitting the F10 key, or by clicking on PLAY. The F10 key is preferable in that the interface window disappears, allowing you to see the full screen animate. When you have finished editing the Act, hit the ESC key to return to the main window.

TEXT This is the text that, once translated, will be spoken. The text needs to be translated into Phonetic, however, before it can be used by the narrator.device. Clicking on the TRANSLATE gadget accomplishes that task.

TRANSLATE This is the Phonetic spelling that is required by the narrator.device. Clicking on the gadget converts the TEXT into Phonetic form, and puts it in the string gadget just to the right. The Phonetic text can be edited as normal text, but remember that all letters must be upper-case, and the spelling must not break strict spelling rules (see Writing the Phonetic). If it is spelled wrong, a requester that says "The Phoneme text has a spelling error." will appear. In that case close the requester and edit the Phoneme text to remove the misspelling. If you edit the text, be careful not to hit TRANSLATE, as this will replace the Phoneme text with the translated normal TEXT.

Bkgd Image Stands for "Background Image", and is the image used for the background of the mouth. Choose the image simply by holding down the left mouse button over the gadget and then moving the mouse up or down to select the desired image.

TEXT COPY COPY COPY COPY COPY			
TRANSLATE KAA4PIY KAA4PIY KAA4PIY KAA4PIY KAA4PIY			
Rate		Bkgd Image	<none>
Pitch		Mouth AnBr	<none>
Volume			
Centphon		Articulate	
		PLAY STOP RESET	
☐ NATURAL	☐ Female	AFbias	AVbias
F0enthus		A1adj	A2adj
F0perturb		F1adj	F2adj
			F3adj
Volume		Sound	<none>
Begin			
End			

If there is no image or if you want to add an image to the list, you have to close the editor and choose File->Resources from the menu.

Mouth AnBr Stands for "Mouth AnimBrush" and works identically to the Bkgd Image gadget, except that it chooses the animbrush to be used as the animated mouth.

The narrator device included many user defined parameters that define the voice characteristics. Many, such as the AFbias, AVbias, A1adj - F3adj, can produce highly distorted sounds when used more than ± 1 , although their full control range is included to be complete. If you stray too far from reasonable parameters, then press RESET to return you to the default voice.

Volume, Rate and Pitch are fairly obvious controls of the narrator voice.

Centphon is an optional control that slants the voice towards particular vowel sounds that are chosen from the pop-up menu. This feature is meant to simulate regional accents. The slider to the right of the pop-up menu must be greater than 0 for it to take effect. The greater the number, the greater the effect.

DEFAULT 16 FRAME ANIMBRUSH



1



2



3



4



5



6



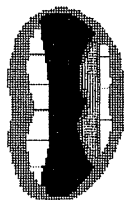
7



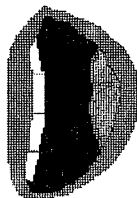
8



9



10



11



12



13



14



15



16

DEFAULT 8 FRAME ANIMBRUSH



1



2



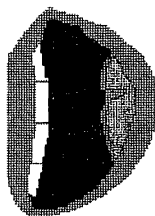
3



4



5



6



7



8

DEFAULT 4 FRAME ANIMBRUSH



1



2



3



4

Articulate affects the degree to which the syllables are annunciated, being very indistinct in the lower settings and very choppy at the upper settings.

The voice mode has 3 settings which are **NATURAL**, **MANUAL**, and **ROBOT**. **F0enthus** simulates the amount of enthusiasm in the voice. **F0perturb** will create shakiness in the voice, as if the speaker were old.

Digitized Sound

The section at the bottom of the screen allows you to optionally have a sampled sound triggered the same time that the narrator speaks. The sound must first be loaded into animouth via the Resources window. Choose the sound from the list, and move the sliders for the begin and end positions until you get the section of the sound you want. See the section Adding Digitized Voice tracks for for information.

Adjusting the Position of the Mouth

The position of the animated mouth is changed by hitting the F1 key. The Edit window will disappear, and one frame of the selected animbrush will blink on and off. Pressing keys 1-6 will determine which frame is blinked on and off. You can get a rough position by holding down on the blinking frame with the left mouse button, then dragging it to the desired location. You can then fine tune this position by using the arrow keys to move it one pixel at a time. By using keys 1-6 to choose the same animbrush frame as the background image, it will stop blinking when the image is lined up perfectly. Press F1 again to exit the positioning mode.

ADDING DIGITIZED VOICE TRACKS

Analyzing sound files to try to interpret mouth positions is a very computation intensive job, that most Amigas would not be able to handle in real time. But by choosing the words to be spoken ahead of time, and by adjusting the start position and speed of the moving mouth, a fairly good match to a soundtrack can be made. The best results are achieved by breaking the sound file up into logical sections, and getting the mouth to match each part, then playing back the parts in sequence in the story window. First, choose the sound file to be used in the EditSpeech window, and make sure the volume is turned up so that it can be heard. Choose the part that you want to animate by using the Begin and End sliders. Next type in the words that are spoken in the Text gadget, then hit Translate to convert the text into Phonetic. You should now hear two voices on playback, the synthesized voice of the narrator, and the sampled sound. Adjust the rate of the synthesized voice until it matches the sampled sound. If the synthesized voice doesn't start quite soon enough, try adjusting the sampled sound to slightly earlier to compensate. Turning off Double Buffering in the Speech Options (in the main menu) may help speed it up as well, but playback may not be as smooth. When you are satisfied with the match, turn the volume down on the synthesized voice so that you only hear the sampled sound. The mouth now matches the sampled sound!

LOADING RESOURCES

Images, AnimBrushes and Sounds are managed through the Resources window, in the File Menu. Resource files (Images, AnimBrushes and Sounds) are added and removed from lists using the Add and Remove buttons that are on the left side of the window. Clicking on the Add button will bring up a file requester from which you choose the file to be added to the list. If the file is not of the right type, the file name won't be added to the list. Holding the left mouse button down over the popup menu displays the files that are currently in the list. The chip memory usage of the file is displayed under the popup menu. The Load and Unload buttons can be used to determined how many related files can be loaded at once, to help in designing memory efficient characters. Once files are added to the resource lists, they can be accessed from the various editors that use them. When a project is saved, the name and location of these files are saved with it, regardless of whether they are used in the project or not.

Resources - AnimBrushes		Total Free Chip Ram = 1682992	
Add Images	No Image		
Delete		Load	Unload
Add AnimBrs	No Anim Brush		
Delete		Load	Unload
Add Sounds	No Sound		
Delete		Load	Unload

LOADING TEXT

Text for the Speech Acts are loaded from the Story Menu, and take the form of the Speech Acts already in the Story List, repeating Acts until all the text is loaded. It expects a return character after each line to indicate separate Acts, but will truncate lines over 128 characters in length.

WRITING THE PHONETIC

Since the English language is often spelled differently from the way it is pronounced, the Amiga's original translate function will do only a fair job, since it keeps only the most often used words in its dictionary. Other more recent translator.library files may do a better job, especially when targeted at a language other than English. Even so, you can always tweak the phonetic text to get it to sound more as you intended, especially in the area of inflection, cadence, and syllable emphasis. This is also important if you are using digitized voice tracks to sync the mouth to. It may become awkward to get the narrator to match what many people might say in normal conversation. It therefore becomes necessary to edit the phonetic manually. Below are some guidelines for getting the pronunciation you want.

Most people are used to seeing the phonetic spelling in dictionaries, known as the International Phonetic Alphabet. Since many of these symbols were not available on computer keyboards, the Advanced Research Projects Agency (ARPA) created the

ARPABET, a way of representing the symbols using only upper-case letters available on most keyboards. The narrator uses this form of phonetic, so you need to know how sounds are represented to get a good voice using the narrator. The narrator device looks at the phonetic one sentence at a time, and it is spoken as a coherent unit. The normal contour of the stress and intonation of a sentence has the pitch rising quickly on the first stressed syllable, then slowly falling over the sentence until the last syllable, where there is a sudden lowering. This pattern is altered by special symbols that allow you to give a particular stress and cadence as the sentence progresses. Using digits immediately after vowels will contour the stress to give emphasis in the way that you want the sentence spoken. The larger the number, the greater the stress. The TRANSLATE function will add these digits automatically into the phonetic, but often the emphasis is not exactly where you want it. If you don't want to be burdened with the many rules inherent in the phonetic ARPABET spelling, you can often achieve good results merely by altering the digits already inserted by the translator. But to get the very best output, you need to learn the ARPABET rules. Special symbols will alter various aspects of the way a sentence is pronounced. The punctuation at the end determines how the sentence trails off. If there is a period, there will be a lowering of the pitch of the voice at the end, denoting completion of a phrase. If there is a question mark, there will be a rise in the pitch at the end, a tonal request for an answer. If there is no

punctuation, a hyphen will be appended to the phrase, which will cause a short pause. A comma in the sentence creates an expected pause, with a slightly rising pitch. Use more commas than you would normally in writing, as they will more clearly set off clauses from one another. Using a dash will have a similar effect, but not as pronounced. Use it to divide phrases. Parentheses can be used to give emphasis to an entire noun phrase, where more than one word makes up the content, such as the phrase "a rolling stone".

Below is a table of Phonemes that make up all words, in any language. There are many more vowels than the a,e,i,o, and u that we are accustomed to. Diphthongs are vowels that change sounds as they being spoken. To get the right sound out of the narrator, say the word to yourself slowly, emphasizing the vowels. Check the sounds against the table to match what you are hearing. It can be a tedious process, but can make a big difference in the final output.

TABLE OF PHONEMES

Consonants	English Example
B	bent
/C	locate
CH	chin
D	den
DH	then
DX	itty
F	fake
G	gallon
/H	happy
J	jet
K	kettle
L	lost
M	mouse
N	now
NX	finger
P	poke
Q	(glottal stop)
QX	(silent vowel)
R	race
S	sand
SH	ship
T	take
TH	thick
V	voice
W	waste
WH	where
Y	yes
Z	zebra
ZH	sure

Vowels	English Example
AA	art, bother
AE	at, absolute
AO	fall, awful
AX	abound, calcium
EH	letter, enter
ER	herd, earn
IH	inch, little
IX	lid, instant
IY	east, beef
OH	more, ford
UH	noodle, took

note: vowels ending with X are unstressed, almost silent

Diphthongs	English Example
AW	out, bounce
AY	I, modify
EY	ace, play
OW	open, float
OY	boil, toy
UW	flu, new

OTHER SYMBOLS

Digits 1-9 are placed after vowels to indicate amount of stress.

- at the end of sentences lowers pitch on last syllable
- ? at the end of sentences raises pitch of last syllable
- , pause between clauses
- short pause between phrases
- () surrounds a noun phrase

THE JAWMAP EDITOR

The JawMap Editor is for advanced users that want to customize the way that animouth interprets the output of the narrator.device . It makes it possible to add more mouth positions to a standard set of 4,8, or 16 frame animbrushes, or design a new "Mouth Font" from scratch. It is very simple to add a consonant mouth position to an existing animbrush and make it work in animouth, so we will cover that first. Let's say you want to add a "TH" mouth position to an existing animbrush. The "TH" mouth position is a distinctive visual clue that may be a strong element in certain characters (Think of "thuffering thuccatash"). The first step is to add this frame to your existing animbrush. If it is a 16 frame animbrush, for example, you would create a frame 17 in the anim, draw the frame, then pick up a new animbrush with 17 frames instead of 16. If you save the animbrush with the same name, an existing saved character will load it automatically. Start animouth and load the existing character (or start a new one). Now we need to tell animouth about how we want to use this extra frame. Choose "Edit JawMaps" from the file menu. Choose the animbrush from the pop-up file list. On the left side of the screen you will see a listing of all the possible phonemes that are used by the narrator. There is a number beside each consonant phoneme which represents the animbrush frame that is used when the phoneme is in the text that is spoken. You'll notice that most of these consonant phonemes use the same number, because many of the consonants will visually look similar when spoken. Since we want to add the "TH" phoneme, simply change that

number to 17 so that each time "TH" is spoken, that image will come up. Each of the consonant phonemes can have its own image, although it means drawing a separate image for each one, and more chip ram will be consumed keeping that image in memory during playback. Next, save this new JawMap, giving it a name like Janel17, to remind you of the number of frames. This however, doesn't permanently link the JawMap to the Character; you'll have to save the project or the character to do that. What you have saved is just the numbers on the screen, so that later on you can use that mapping with a different character by loading it into a selected animbrush. Remember that an animbrush does not inherently have a JawMap linked to it. animouth assigns a default JawMap to it when it is loaded in the Resources window, depending on the number of frames in the animbrush. Currently there are 3 default mappings for 4, 8, and 16 frames. If the number of frames is between these numbers, animouth will give it the lower of those numbers as default. A 10 frame animbrush will get the 8 frame JawMap. It is up to

AnimBrushes/8sources.abr											
LOAD			1	1	1	1	2	2	2	2	2
SAVE			1	1	1	1	2	2	2	2	2
OK			1	1	1	1	2	2	2	2	2
L 15	D 15	TH 15	1	1	1	1	2	2	2	2	2
H 14	K 15	ZH 15	1	1	1	1	2	2	2	2	2
B 14	Y 15	DN 15	1	1	1	1	2	2	2	2	2
F 14	J 15	WR 15	1	1	1	1	2	2	2	2	2
C 13	/C 15		1	1	1	1	2	2	2	2	2
T 13	T 15		1	1	1	1	2	2	2	2	2
R 15	GR 15		1	1	1	1	2	2	2	2	2
N 15	/H 15		1	1	1	1	2	2	2	2	2
N 15	CH 15		1	1	1	1	2	2	2	2	2
S 15	NX 15		1	1	1	1	2	2	2	2	2
Z 15	SH 15	X 15	1	1	1	1	2	2	2	2	2

you to edit the JawMap for that animbrush to tell animouth how to use frames 9 and 10, and assign them to particular sounds.

Mouth Width and Height

Fine, you say, but what are all those numbers on the right side that are unlabeled? Well, it gets a little trickier. The consonant sounds are actually exceptions to the normal output of the narrator. The narrator, while speaking, outputs numbers that are supposed to be the relative width and height of the mouth. These numbers are from 0 to 15 for both width and height. When making an "o" sound, for example, the lips are pursed and both the width and height are small numbers, maybe (3,2). That needs to be converted to an actual animbrush frame number that is to be displayed at that moment. What you see on the screen is a 16 X 16 grid of possible width and height combinations that can occur. Since there are a lot of them, 256 to be exact, we've got to use specific frames on a range of these. Frame 1, for example, is being used from (0,0) to about (4,4) (for a 16 frame animbrush). So the width and height information is used during the vowel sounds, when the mouth is open, and the consonant sounds are inserted as exceptions to this scheme. To get a more visual explanation of what's going on, exit the JawMap Editor, then choose Speech in the Options menu, and click on "Display JawMap" (DoubleBuffering will be turned off). Now edit a Speech Act by double clicking it. Hit F10 to play it, and you will see a grid appear, with a little square that dances among it, leaving marks. This is

a visual representation of the raw narrator output, and by slowing it down and playing it back over and over, you can start to see the patterns that emerge in the movement. The grid corresponds exactly to the JawMap Width and Height grid, except divided into 16 sections instead of 256, for simplicity. So when the narrator outputs these numbers, animouth looks them up in the JawMap to find and display the appropriate animbrush frame. To summarize, each animbrush in animouth is paired with a JawMap that tells animouth what frame to display when certain output from the narrator is received. By editing the JawMap, you can choose what frames are matched with the output.

AREXX INTERFACE

Many functions of animouth can be controlled via ARExx. This allows triggering of playback, changing text, pitch, speed, and other attributes from a script or other programs. Using an authoring program such as AmigaVision or Scala can open up many other possibilities by linking animouth to other animations. Trigger a character to say something when you get email, or other such nonsense. Most importantly, animations can be created using non-native resolutions, or different media, such as film or claymation. Since you can pull the mouth position information from animouth via ARExx, you can directly create sequences of images that keep the same timing to a soundtrack. animouth ARExx commands support any frame rate, so conversion to/from PAL video, NTSC video and film rates is done automatically. See the ARExx documents on the disk for complete information. Make sure to also visit weemsware.com occasionally to see what new scripts or utilities may have emerged. If you have created something of interest that you want to share, send it to wbowie@weemsware.com so it can be posted on the web site.

WeemsWare releases it's first commercial product....October 2, 1998



Overview

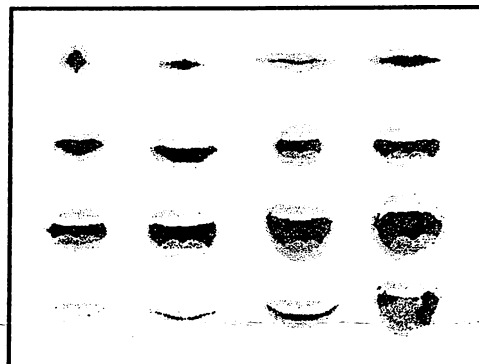
Realtime talking character animation tool. Generates lip synchronization using the Amiga's narrator.device, and your own IFF Images, animbrushes and sounds.

Concept

The program concept grew from a desire to create an animated mouth using the the Amiga's unique narrator.device. **animouth's** creator, Walter W. Bowie, wanted to explore the relationship between the narrator's voice and animated mouth movements, to reveal the full creative possibilities. The explorations of how to assemble and synchronize the graphic and sound elements led to the creation of animouth. The multitasking capabilities of the Amiga, as well as it's ability to move images around quickly in memory, allows for realistic character speech in realtime, even with limited resources.

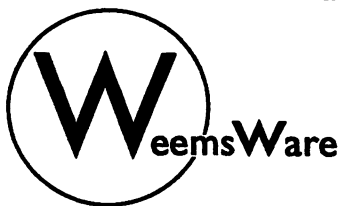
How it Works

The Amiga's narrator.s.device, while generating synthesized speech, also outputs messages which an application can interpret as mouth width and height. **animouth** exploits this approach in displaying vowel sounds, while improving on the design by inserting exceptions for consonants to give a more realistic look. Up to 64 different images can be used to display each animated mouth, mapped to 270 possible events that can be generated. Although default mapping is provided, **animouth's** JawMap editor allows for individual interpretation of the narrator.device's output. Optionally, sounds can be imported to be triggered in sync with mouth movement. Volume level is adjustable, so the sound can be simultaneous with or replace the narrator voice. **This allows you to animate any voice you can digitize.**

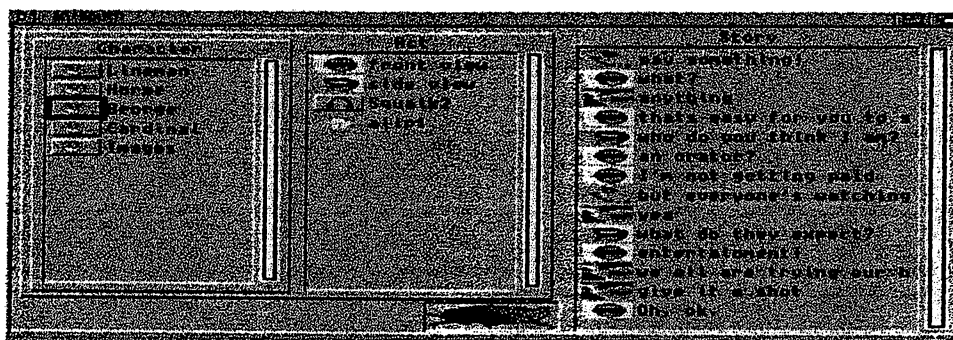


Implementation

A complete implementation of all the narrator.device voice attributes (speed, volume, timbre, etc.) is fully editable by double clicking icons. **animouth's** drag and drop interface makes sequencing and editing speech with graphics and sound simple and intuitive. Sequences can be looped or played randomly. The icons may also be instantaneously triggered using the function keys, or by ARexx. The ARexx interface allows creation of animations in resolutions not supported by the native chipset. Using ARexx, **animouth** can even allow importing mouth positions into 3D programs, such as Lightwave. The interface is organized by Character hierarchy, so voice attributes, images, and sounds can be associated with a particular character. Characters can be saved separately as "kits" which can be loaded into any project.



Walter Bowie
4190 Evergreen Road
Oxford, MD 21654
tel. (410) 226-0404
email wbowie@weemsware.com
website www.weemsware.com



**Realtime animation achieved with
the fast talking mouth! It's**

animouth

Create talking characters for any video

Do fast pencil testing of characters for more traditional animation

Teach the mechanics of mouth movement in character animation

Use as Mouth Position input for 3D animation via ARexx

Animate any voice you can digitize

Minimum Requirements

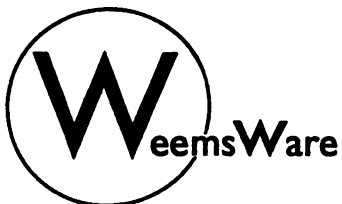
Amiga OS 2.04 and up
1Meg Chip Ram
68000

Suggested Requirements

Amiga OS 2.04 and up
2Megs Chip Ram, additional Fast Ram
68020
1Meg hard Drive space

animouth includes

narrator.device and
translator.library files.
requires no external GUI Libraries
(such as MUI or ClassAct) and
supports these file formats:
IFF_ILBM, IFF_8SVX,
IFF_ANIMbrush,
ASCCI text



www.weemsware.com